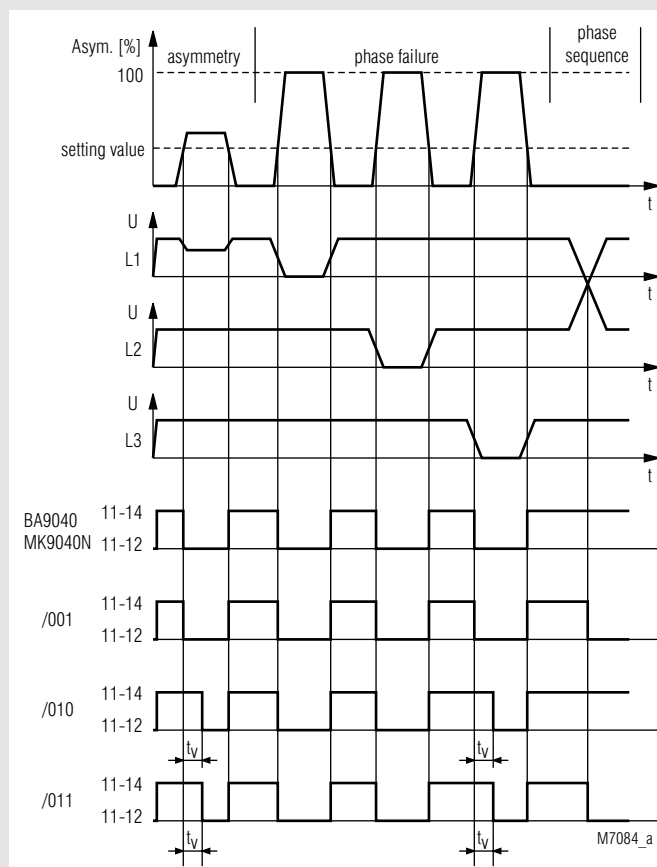
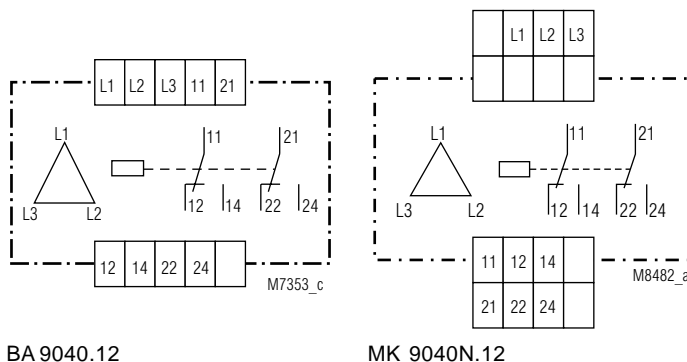


- According to IEC 255, EN 60 255, VDE 0435 part 303
- Recognition of
 - voltage asymmetry
 - phase failure
 - voltage feedback
 - optionally with phase sequence recognition
- Optionally with adjustable response delay
- Insensitive against
 - symmetric harmonics up to K-factor K 20 %
- 2 LED displays for power supply and state of contact
- BA 9040: width 45 mm
- MK 9040N: width 22,5 mm

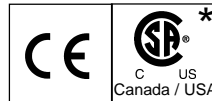
Function diagram



Circuit diagram



Approvals and marking



* only for BA 9040 (see variants)

Applications

Monitoring three-phase mains for voltage asymmetry, phase failure or incorrect phase sequence, e.g. in elevators, escalators, crane systems etc.

Indications

upper LED: on when supply voltage connected
lower LED: on when output relay energized

Technical data

Input

Nominal voltage U_N : 3 AC 400 V
Voltage range: 0,8 ... 1,1 U_N
Nominal consumption:
 BA 9040: approx. 4,8 VA
 MK 9040N: 7 VA
Nominal frequency: 50 / 60 Hz
Frequency range: 45 ... 65 Hz
Temperature influence: < 0,05 % / K
Frequency influence: < 0,02 % / Hz
Resistance of harmonics symmetric: K-factor K 20 %

Setting ranges

Setting range: 5 ... 15 % voltage asymmetry
Repeat accuracy: ≤ 0,5 %
Release ratio: < 4 % U_N
Voltage feedback recognition: up to 100 % - setting value, e.g. when setting value = 5 % asymmetry, 100 % - 5 % = 95 %
 Recognition of voltage feedback up to 95 %

Time delay t_v

BA 9040: 0,5 ... 5 s
 MK 9040N: 0,5 ... 10 s

Output

Contacts 2 changeover contacts
Response/release time:
 BA 9040: ≤ 1 s / ≤ 250 ms
 MK 9040N: ≤ 1,5 s / ≤ 250 ms
Thermal current I_{th} : 6 A (see continuous current limit curve)

Technical data			
Switching capacity			
to AC 15			
NO contact:	3 A / AC 230 V	IEC/EN 60 947-5-1	
NC contact:	1 A / AC 230 V	IEC/EN 60 947-5-1	
Electrical life:			
to AC 15 at 3 A, AC 230 V: 10 ⁵ switching cycles IEC/EN 60 947-5-1			
Permissible switching frequency:			
6 000 switching cycles / h			
Short circuit strength			
max. fuse rating:			
4 A gL IEC/EN 60 947-5-1			
General data			
Operating mode:			
Continuous operation			
Temperature range:			
- 20 ... + 60 °C			
Clearance and creepage distances			
overvoltage category /			
contamination level:			
4 kV / 2 IEC 60 664-1			
EMC			
Electrostatic discharge:			
8 kV (air) IEC/EN 61 000-4-2			
HF irradiation:			
10 V/m IEC/EN 61 000-4-3			
Fast transients:			
2 kV IEC/EN 61 000-4-4			
Surge voltages			
between			
wires for power supply:			
2 kV IEC/EN 61 000-4-5			
between wire and ground:			
4 kV IEC/EN 61 000-4-5			
Interference suppression:			
Limit value class B EN 55 011			
Degree of protection:			
Housing: IP 40 IEC/EN 60 529			
Terminals: IP 20 IEC/EN 60 529			
Housing:			
Thermoplast with V0 behaviour			
according to UL subject 94			
Vibration resistance:			
Frequency 10 ... 55 Hz,			
Amplitude 0,35 mm IEC/EN 60 068-2-6			
20 / 060 / 04 IEC/EN 60 068-1			
Climate resistance:			
Wire connection:			
2 x 2,5 mm ² solid or			
2 x 1,5 mm ² stranded wire with sleeve			
DIN 46 228-1/-2/-3/-4			
Wire fixing:			
BA 9040:			
Flat terminals with self-lifting			
clamping piece IEC/EN 60 999-1			
MK 9040N:			
Box terminal with wire protection			
Mounting:			
DIN rail IEC/EN 60 715			
Weight:			
325 g			

Dimensions

Width x height x depth:

BA 9040:	45 x 74 x 133 mm
MK 9040N:	22,5 x 90 x 100 mm

Standard type

BA 9040.12/001 3 AC 400 V 50/60 Hz			
Article number:	0043764	stock item	
<ul style="list-style-type: none"> • With phase sequence detection • Without operate delay • Output: 2 changeover contacts • Nominal voltage U_N: 3 AC 400 V • Width: 45 mm 			
MK 9040N.12/001 3AC 400 V 50/60 Hz			
Article number:	0055712	stock item	
<ul style="list-style-type: none"> • With phase sequence detection • Without operate delay • Output: 2 changeover contacts • Nominal voltage U_N: 3 AC 400 V • Width: 22,5 mm 			

Variants

BA 9040.12/60:	CSA/UL approval
BA 9040.12/0 _ 0:	without phase sequence detection
BA 9040.12/0 _ 1:	with phase sequence detection
BA 9040.12/00 _:	without time delay
BA 9040.12/01 _:	with adjustable time delay
	t _v : 0 ... 5 s
MK 9040N.12/0 _ 0:	without phase sequence detection
MK 9040N.12/0 _ 1:	with phase sequence detection
MK 9040N.12/00 _:	without time delay
MK 9040N.12/01 _:	with adjustable time delay
	t _v : 0 ... 10 s

Ordering example for variants

<u>MK 9040N.12</u>	<u>/0</u>	<u>_</u>	<u>3 AC 400 V</u>	<u>50 / 60 Hz</u>	
					Nominal frequency
					Nominal voltage
					On request BA 9040:
					3 AC 230 V
					3 AC 440 V
					3 AC 660 V
					MK 9040N:
					3 AC 400 V
					0: without phase
					sequence recognition
					1: with phase
					sequence recognition
					0: without t _v
					1: with t _v
					Contacts
					Type

Characteristics

